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(54) **KNIFE WITH BLADE GUARD**

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(57) **ABSTRACT**

A knife with a guard assembly generally comprises a blade member, a handle assembly, and a blade guard assembly. The blade member includes a blade having a sharpened edge and an integral shank. The handle assembly is mounted to the shank. The blade guard assembly is mounted for pivotal movement about the blade member between a retracted position adjacent the handle to a protective position covering the sharpened edge. The blade guard is spring loaded by a spring about a pivot axis and a biased actuator secures the blade guard in the retracted position and the stable protective position. Upon depressing the actuator the blade guard assembly is pivoted to the protective position from the retracted position by a force of the spring.

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(52) **U.S. Cl.**

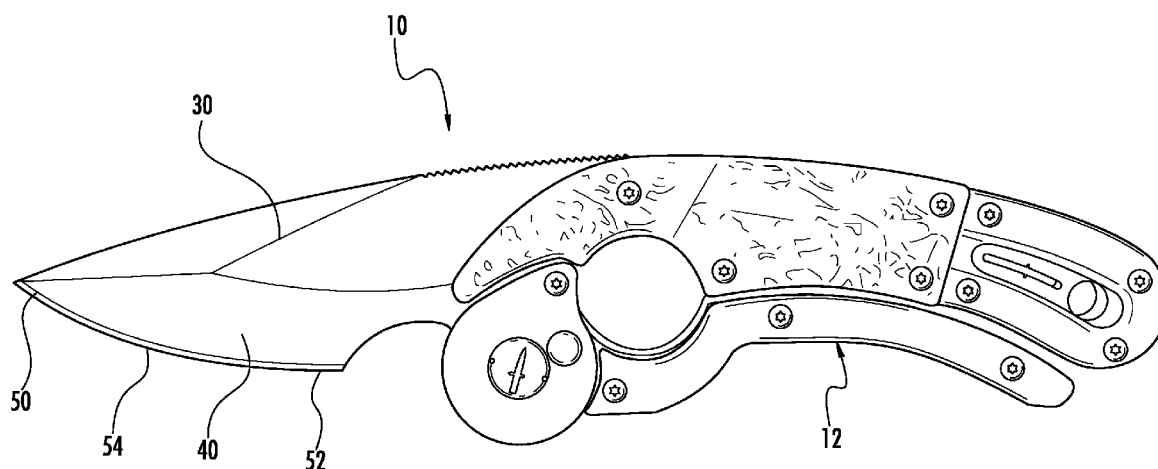
CPC **B26B 29/02** (2013.01); **B26B 9/00** (2013.01)

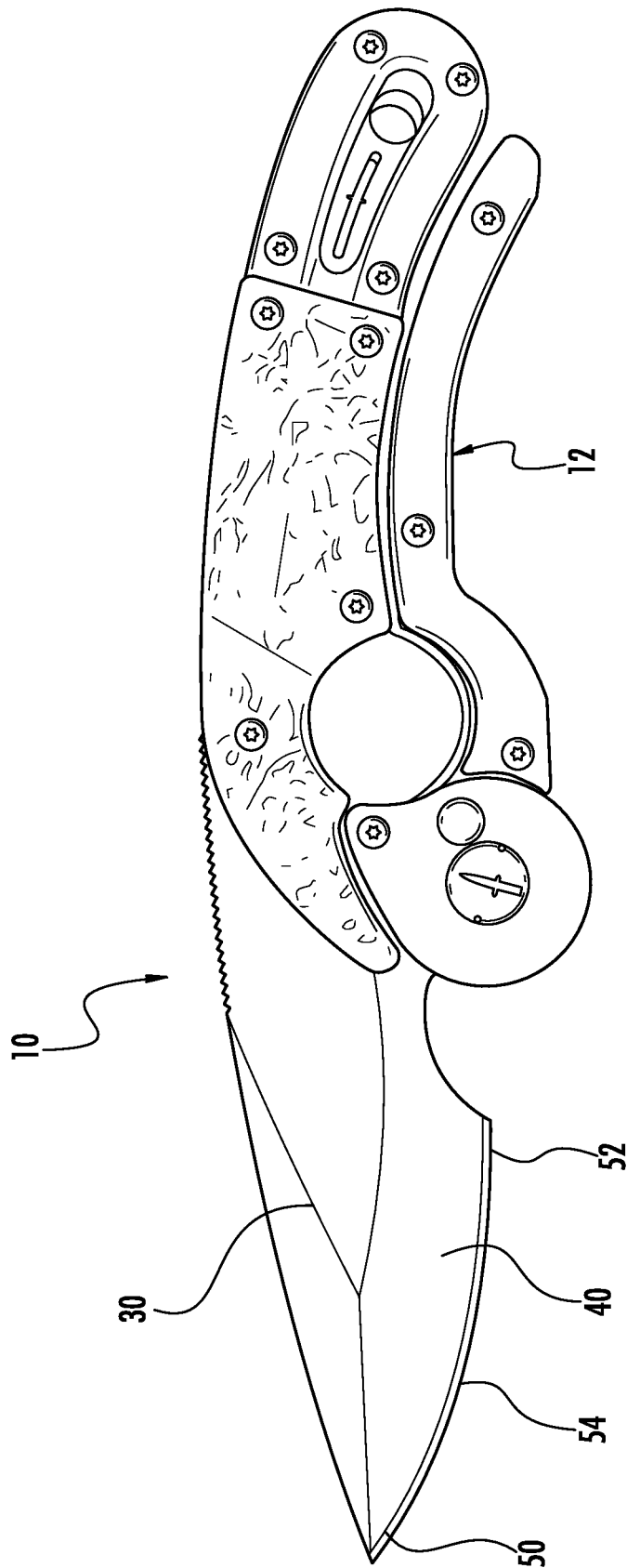
(58) **Field of Classification Search**

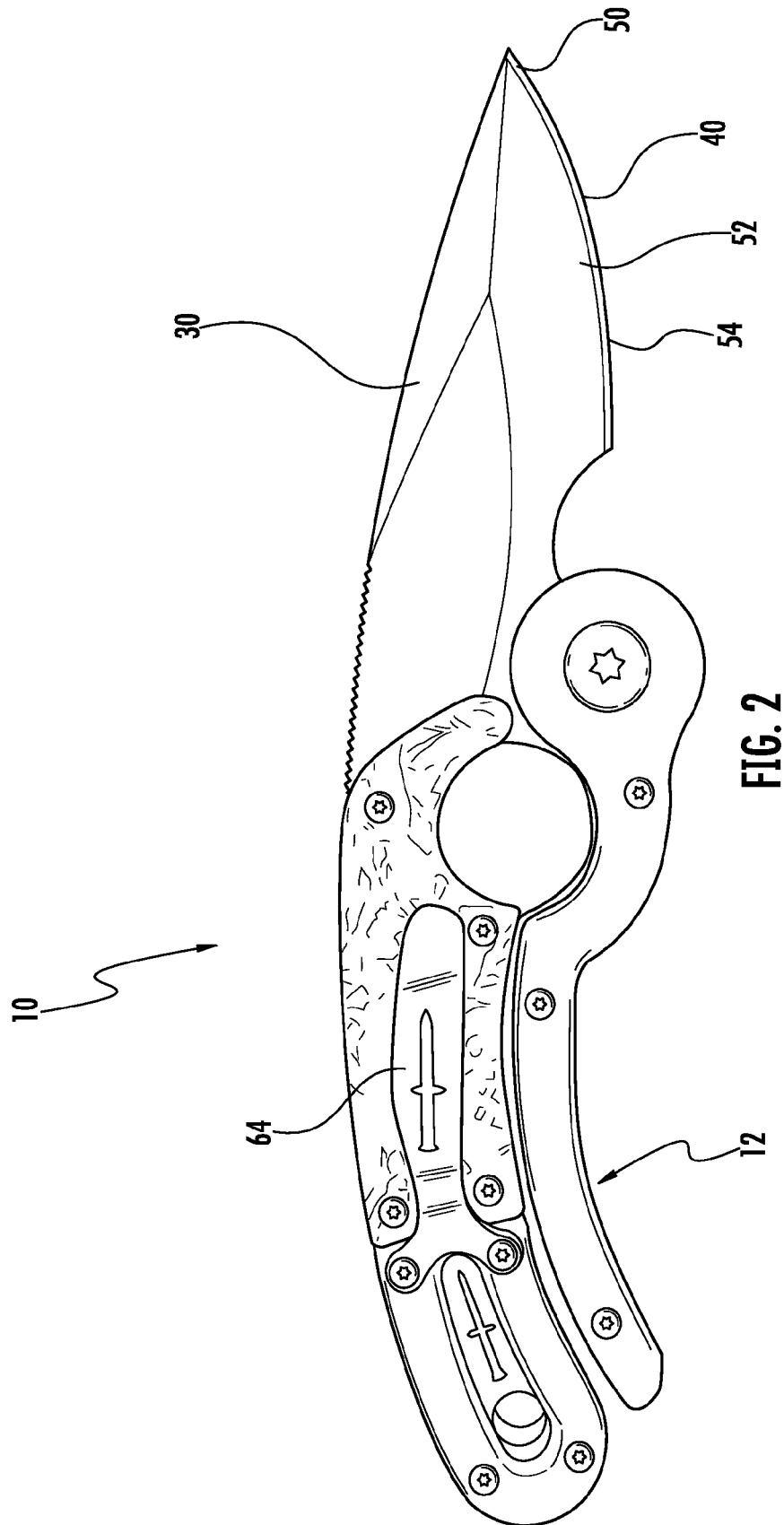
CPC ..... B26B 29/02; B26B 29/025; B26B 29/04

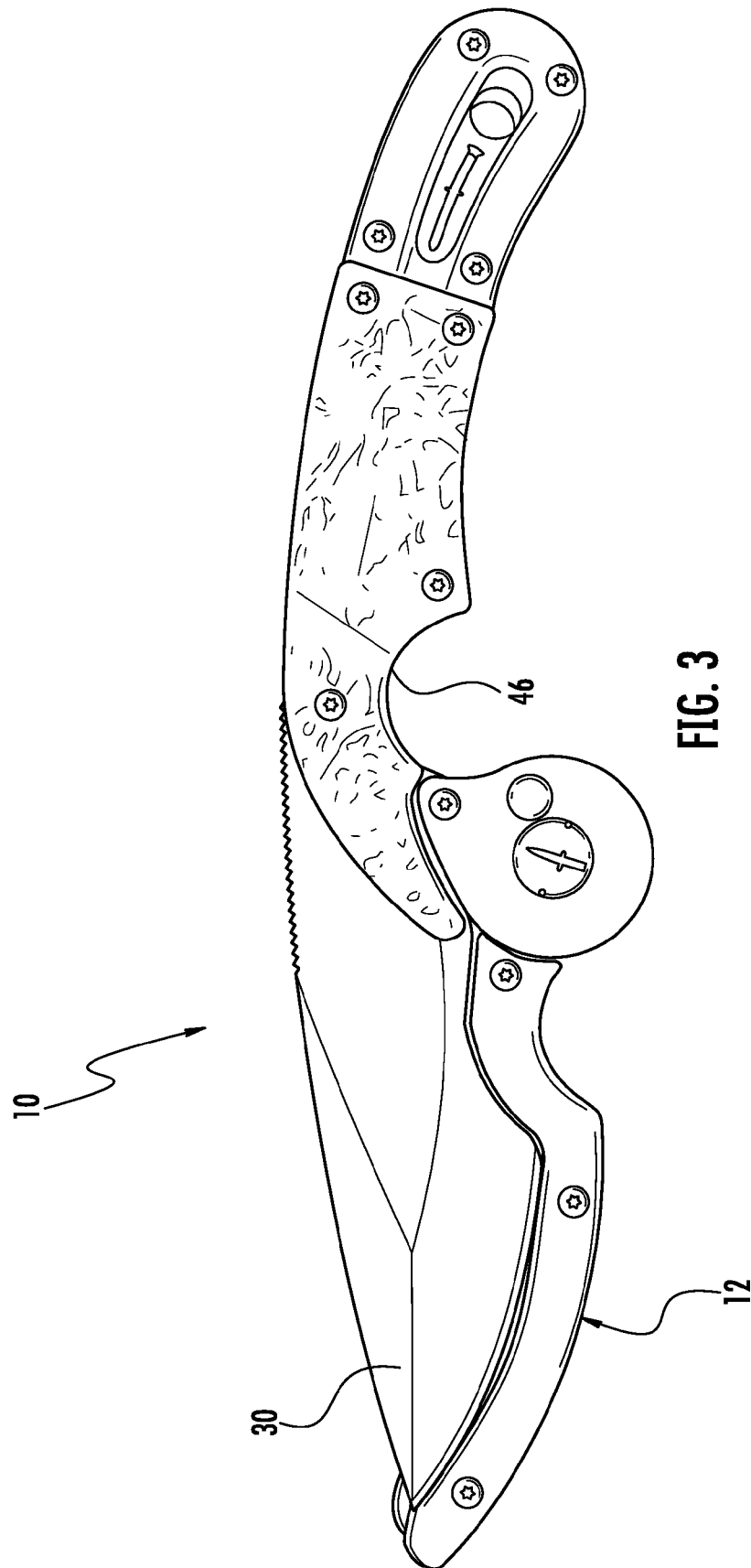
See application file for complete search history.

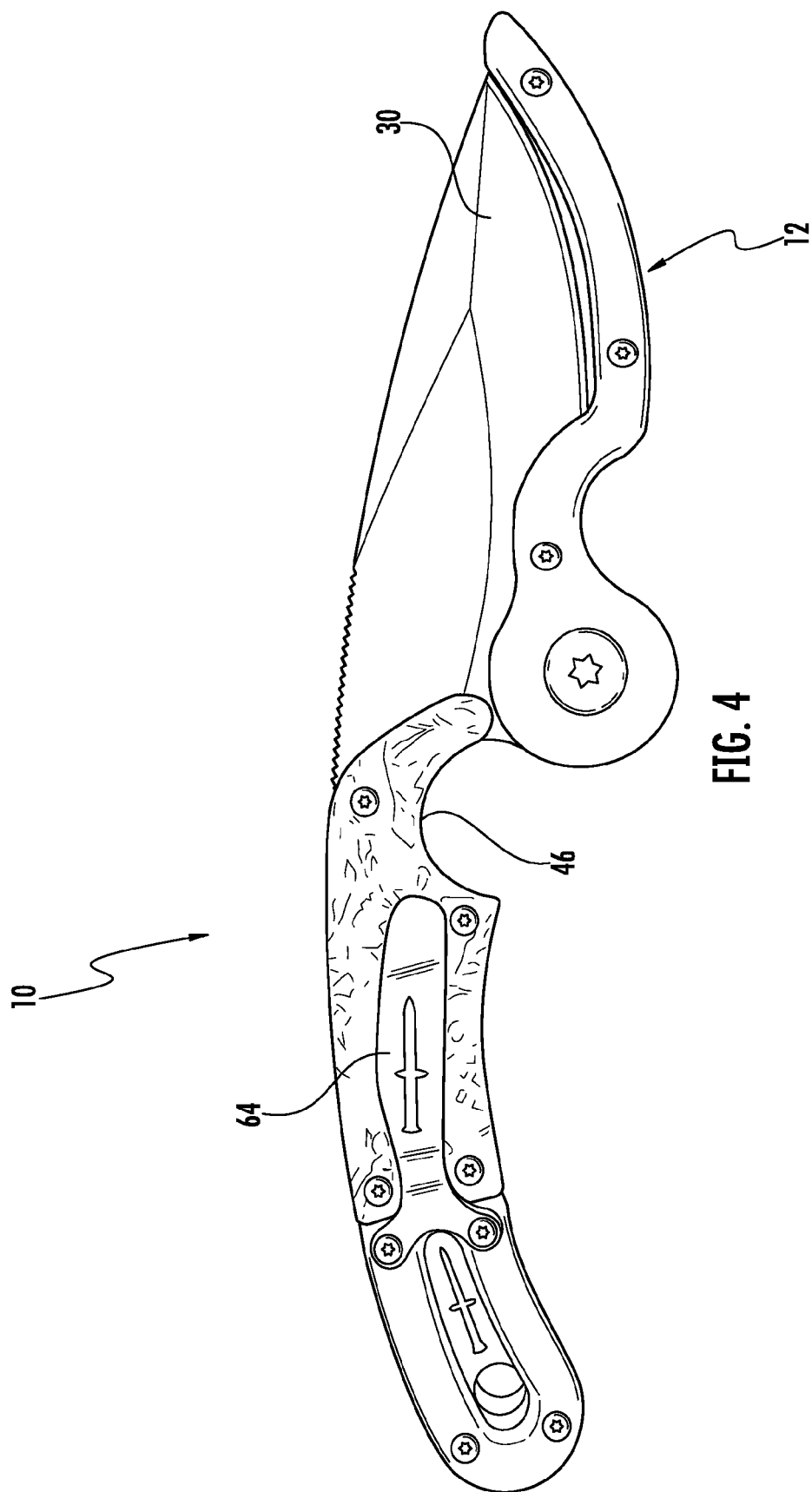
**17 Claims, 7 Drawing Sheets**

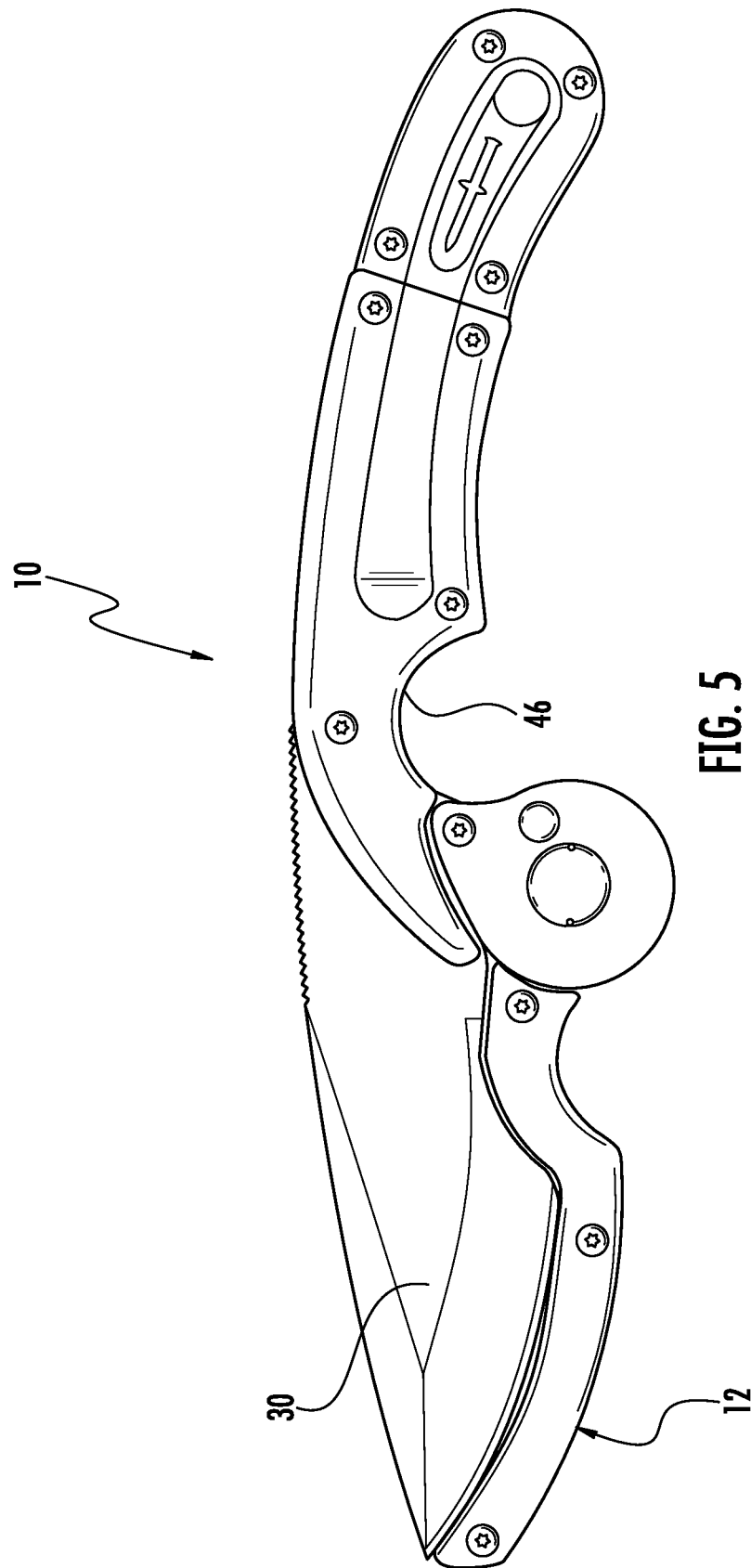












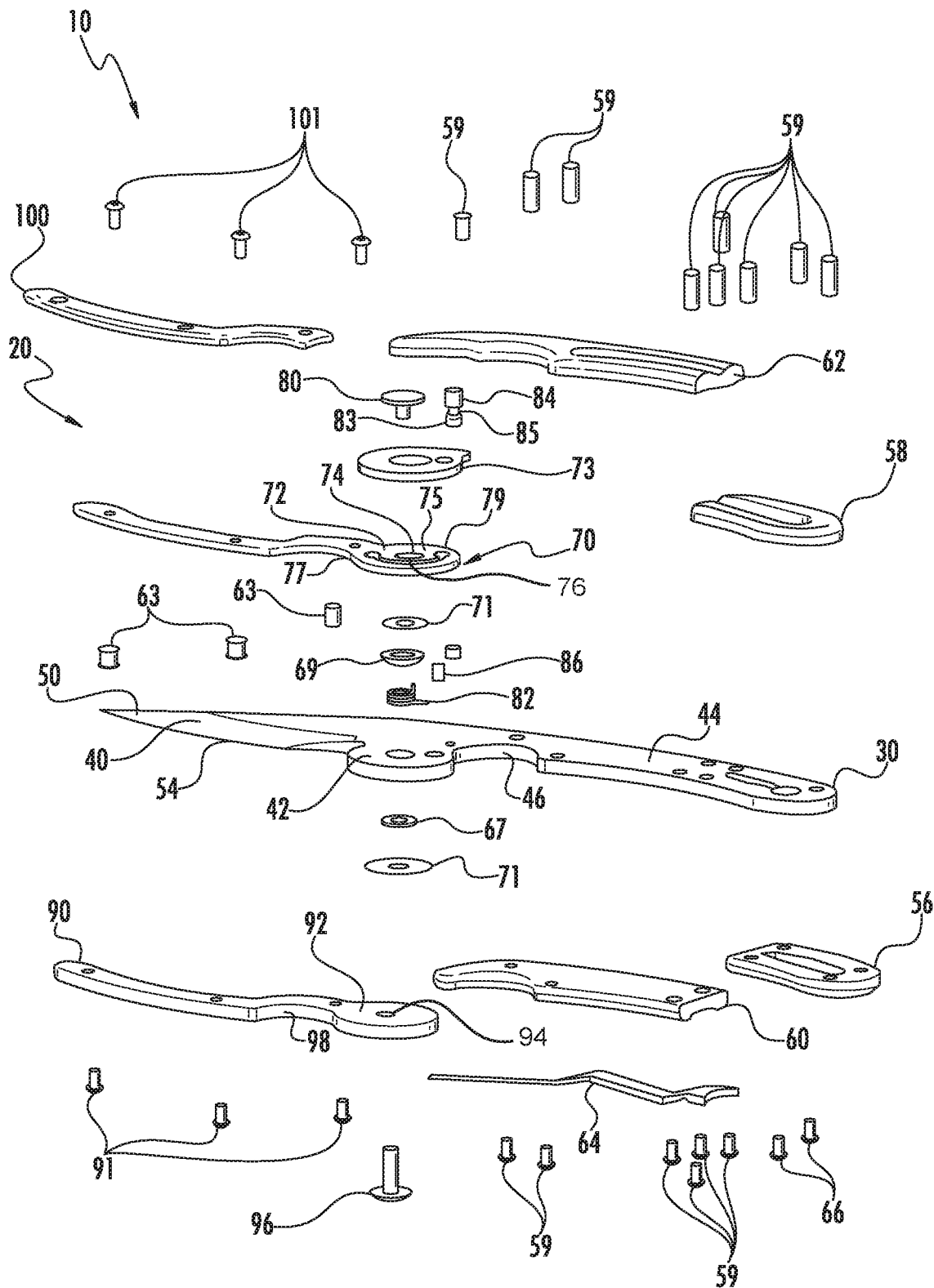
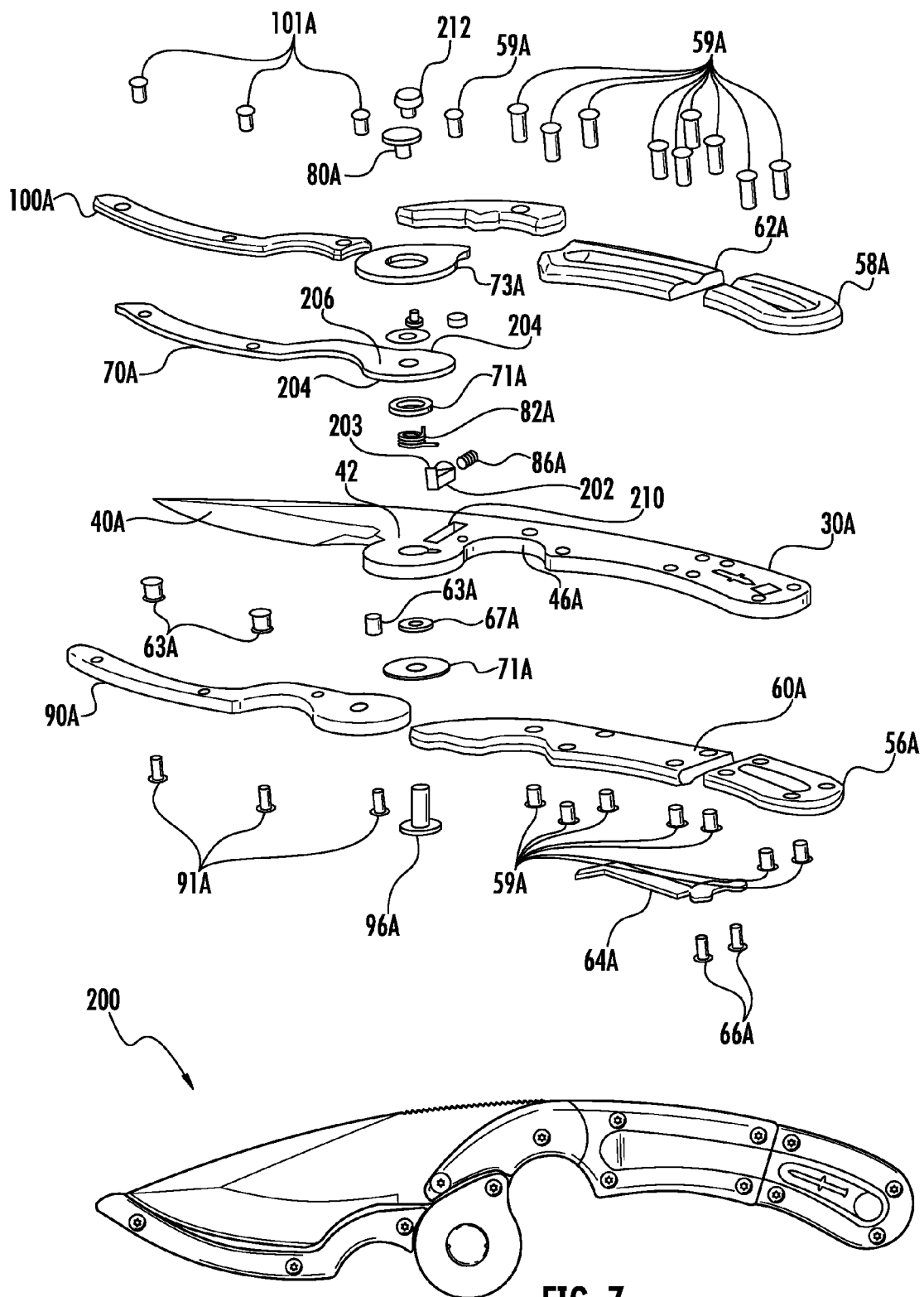


FIG. 6



## KNIFE WITH BLADE GUARD

## BACKGROUND

This disclosure relates generally to knives which are employed hunting, fishing, sporting and other related activities. More particularly, this disclosure relates to portable knives which employ a blade guard.

## SUMMARY

According to aspects of the present disclosure, a knife with a blade guard assembly comprises a blade member, a handle assembly, and a blade guard assembly. The blade member includes a blade having a sharpened edge and an integral shank. The handle assembly is mounted to the shank and may include first and second handle heels mounted to first and second surfaces of the shank, respectively.

The blade guard assembly has a sheath which extends from a quasi-circular shoulder plate mounted for pivotal movement about the blade member. In one embodiment, the sheath includes an actuator arm disposed intermediate first and second sheath members and defining an intermediate channel. The blade guard assembly is spring loaded for pivotal movement about a pivot axis between a retracted position adjacent the handle and a protective position wherein the blade guard assembly covers the sharpened edge. A spring having a first end anchored to the shank and a second end anchored to the circular shoulder plate provides a biasing force necessary for pivotal movement of the blade guard assembly.

A biased actuator secures the blade guard in a stable retracted position and a stable protective position. Upon depressing the actuator the blade guard assembly is pivoted to the protective position from the retracted position by the force of the spring. In one embodiment the actuator is a spring biased button having a first enlarged diameter segment and a second small diameter segment. In an alternative embodiment the actuator is a spring loaded pusher having a detent which projects from a surface of the shank and selectively engages one of a pair of recesses defined in the shoulder plate to maintain the blade guard assembly in the protective and retracted positions.

The blade guard assembly provides a safety mechanism which may be manipulated with one hand to quickly transform the knife so that it may be stored without risking harm to the user. Furthermore, the blade guard assembly protects the sharpened edge of the blade from objects which might dull an exposed blade during storage.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front side view of a knife with a blade guard in the retracted position;

FIG. 2 is a rear side view of the knife of FIG. 1 with the guard in the retracted position;

FIG. 3 is a front side view of the knife of FIG. 1 with the blade guard in the protective position;

FIG. 4 is a rear side view of the knife of FIG. 1 with the blade guard in the protective position;

FIG. 5 is a front diagrammatic view of the knife of FIG. 1;

FIG. 6 is an exploded view of the knife with the blade guard of FIG. 1; and

FIG. 7 is an exploded and an assembled view of another embodiment of a knife with a blade guard.

## DETAILED DESCRIPTION

With reference to the drawings wherein like numerals represent like parts throughout the Figures, a knife with a spring loaded blade guard is generally designated by the numeral **10**. The knife is adapted for use in connection with hunting, fishing, sporting and other outdoor activities. The knife has an ergonomic handle and employs a steel knife blade which is preferably coated with a carbon nitride titanium composition or other high quality, protective coating.

When the knife is being used, the blade guard **12** is disposed at a retracted position adjacent the handle. When it is desired to suspend usage of the knife, a spring loaded blade guard assembly **20** is easily activated by the user for placing the blade in a stable protective position. The knife **10** is also particularly adaptable for safe portability when not in active use whereby it may be easily protectively carried on a belt or in a pocket.

A blade member **30** includes a sharpened steel blade **40**, an integral intermediate connector boss **42** and an integral shank **44**. Shank **44** has an ergonomic contour with a recess **46** to facilitate grasping the knife. The blade member **30** functions as the principal support structure for the knife.

The blade **40** may assume numerous shapes and configurations, including a tapered forward V-shape point **50** adjacent a sharpened blade portion **52** which has a contoured or arcuate edge **54**.

The proximal end of the shank **44** receives and mounts a pair of opposed handle heels **56** and **58** which are secured by screws **59** to the shank. Two aluminum side handles **60** and **62** are mounted to abut the forward end of the heels and are secured by screws **59** to the shank **44**. A belt clip **64** is secured to one side of the handle by a rivet **66**.

The blade guard assembly **20** comprises an actuator arm **70** extending from a circular shoulder plate **72**. The plate **72** has a central opening **74** and a coaxial arcuate guide slot **76** terminating in a pair of enlarged openings **77** and **79**. The plate also has a bore **75** offset from the opening **74**. A mat **71** is disposed between the actuator arm **70** and the boss **42** of the blade member.

A rivet **80** extends through a mat **73** and through the opening **74** to pivotally secure the actuator arm **70** to the connector boss **42**. A torsion spring **82** is wound around the pin of rivet **80**. One end of the spring **82** is anchored in the bore **75** of the circular plate **72**.

A lock button **84** is received in an opening of the mat at the underside of the button. The button **84** has a post which has an enlarged diameter segment **83** and a small diameter segment **85**. The button **84** is biased by a compression spring **86** surrounding the post to a projected position wherein the enlarged segment **83** engages in either of the enlarged openings **77** or **79** of the actuator arms **70**. The opposing sides of the blade member **30** are adjacent a pair of mats **67** and **69**.

A left hand aluminum sheath member **90** has an enlarged circular shoulder plate **92** with an opening **94**. A rivet or cap **96** engages through the opening and engages into the opposed rivet **80**. The forward end portion of the left hand sheath has an arcuate portion with an intermediate recessed portion **98** which is congruent with that of the actuating arm. The sheath member **90** is secured to the actuating arm **70** by screws or rivets **91**.

The right hand side of the actuating arm **70** receives a right hand sheath member **100** which is also secured by screws or rivets **101**. Sheath member **100** has a geometric shape which is generally congruent to that of the actuating

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arm and the forward portion of the left sheath member **90**. Screw barrels **63** are also employed in the guard assembly. Together, the two sheath members **90**, **100** form an intermediate channel **110** which receives the sharpened blade edge **54** to provide a cover or sheath for the blade. Generally the members **90**, **100** preferably have a complementary shape to that of the blade **40**.

It will be appreciated that the intermediate portion of the button post has a reduced diameter segment **85** with a diameter which allows the guide slot to follow around the intermediate segment **85** when the guide slot and the intermediate segment align. Upon depressing the button **84**, the torsion spring **82** thus will force the actuator arm to pivot in the direction of the arrows to the protective position. In the protective position, the compression spring **86** will force the lock button upwardly so that the enlarged segment **83** of the button is now received in the opening **79** to form a positive locked protective position.

When the blade guard is manually retracted to the retracted position, the spring will again force the button **84** to project so that the enlarged diameter segment **83** engages the opening **77**, and accordingly thus secures the blade guard in a stable, secure, retracted locked position.

With reference to FIG. 7, another embodiment of a knife with a spring loaded blade guard is generally designated by the numeral **200**. Knife **200** has substantially the same corresponding components and functions in a substantially similar way, except as described below. The components in knife **200** which correspond to those of knife **10** have the same numerical designation followed by the numeral A.

For knife **200**, the position of the blade guard is secured by a spring-loaded pusher **202**. The pusher **202** is captured in a slot **210**. The pusher **202** forms a projecting detent **203** that engages against a flat edge of the plate **206** of the blade guard actuator arm **70A**. Plate **206** has a pair of opposed recesses which define the flat edges **204** which are engaged by the detent in the protective and the retracted positions. A lock member **212** activates the pusher.

While a preferred embodiment has been set forth for purposes of illustration, the foregoing description should not be deemed a limitation of the invention herein. Accordingly, various modifications, adaptations and alternatives may occur to one skilled in the art without departing from the spirit of the invention and scope of the claimed coverage.

The invention claimed is:

1. A knife with a spring loaded guard assembly comprising:

a blade member comprising a blade with a sharpened edge and integral shank;

a handle assembly mounted to said shank; and

a blade guard assembly comprising a sheath which covers the sharpened edge and being mounted for pivotal movement about said blade member between a stable retracted position adjacent said handle to a stable protective position covering said sharpened edge, said blade guard assembly being spring loaded by a spring configured to bias said blade guard assembly for pivotal movement about a pivot axis and having a biased actuator to retain said blade guard assembly in said stable retracted position and said stable protective position, said sheath comprising an arcuate arm extending from a quasi-circular shoulder plate defining a central opening coaxial with said pivot axis, said spring being a torsion spring having a first end anchored to said shoulder plate and a second end anchored to said shank, wherein said actuator comprises a spring loaded pusher having a detent which projects from a surface of

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said shank and said shank defines a slot adjacent said pivot axis sized to receive said pusher, a pair of recesses extend radially inwardly from a circumferential periphery on opposite sides of said shoulder plate, and said detent selectively engages one of said recesses to maintain said blade guard assembly in said protective and retracted positions and upon depressing said actuator, said blade guard assembly being pivoted to the protective position from said retracted position by a force of the spring.

2. The knife of claim 1, wherein the shoulder plate defines an arcuate guide slot circumscribing said central opening and having first and second ends, said first and second ends each defining an enlarged opening.

3. The knife of claim 2, wherein the biased actuator includes a first enlarged diameter segment configured to selectively engage said enlarged openings at said first and second ends in said retracted and protective positions, respectively, and a small diameter segment designed to engage said arcuate guide slot intermediate said retracted and protective positions.

4. The knife of claim 1, wherein said arcuate arm is disposed intermediate first and second sheath members of said sheath and a plurality of connectors secure said first and second sheath members to said actuator arm.

5. The knife of claim 1, wherein said shank and handle assembly have an ergonomic contour, and said shank defines a recess proximate said blade.

6. The knife of claim 1, wherein said blade defines a recessed heel proximate said shank, and said blade guard assembly has a protruding arcuate segment configured to fit within said recessed heel in said protective position and to cooperate with said shank recess to define a protective forefinger ring in said retracted position.

7. A knife with a spring loaded guard assembly comprising:

a blade member comprising a blade with a sharpened edge and integral shank and defining a recessed heel proximate said shank;

a handle assembly defining a handle recess proximate said blade and having first and second handle heels mounted to first and second surfaces of said shank; and

a blade guard assembly comprising an arcuate actuator arm extending from a quasi-circular shoulder plate disposed intermediate first and second sheath members, said actuator arm being spring loaded and mounted for pivotal movement about a pivot axis between a stable retracted position adjacent said handle to a stable protective position covering said sharpened edge, said blade guard assembly having an arcuately protruding segment adjacent said shoulder plate, a spring having a first end anchored to said circular shoulder plate and a second end anchored to said shank, and a biased actuator securing said blade guard in said retracted and protective positions;

wherein upon depressing said actuator, said blade guard assembly is pivoted to the protective position from the retracted position by a force of said spring; and

wherein said protruding segment fits within said recessed heel in said protective position and cooperates with said handle recess to define a protective forefinger ring in said retracted position.

8. The knife of claim 7, wherein said shoulder plate defines an arcuate guide slot and a central opening, said guide slot circumscribes said pivot axis and includes first

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and second enlarged openings at first and second terminal ends, and said central opening is disposed coaxial with said pivot axis.

9. The knife of claim 8, wherein said actuator has first and second diameters and first and second spaced ends, said first diameter being larger than said second diameter, disposed at said first end and sized to fit within said enlarged openings and secure said blade guard assembly in said retracted and protective positions, and said second diameter is disposed intermediate said first and second ends and sized to fit within said guide slot during pivotal movement of said blade guard assembly between said retracted and protective positions.

10. The knife of claim 7, wherein the blade guard assembly has a complementary shape to that of the blade, and the first and second sheath members define an intermediate channel configured to receive the blade edge.

11. The knife of claim 10, wherein a plurality of connectors secure said first and second sheath members to said actuator arm.

12. The knife of claim 7, wherein said actuator comprises a spring loaded pusher having a detent which projects from a surface of said shank and said shank defines a slot adjacent said pivotal axis sized to receive said pusher, a pair of recesses extend radially inwardly from a circumferential periphery on opposite sides of said shoulder plate, and said detent selectively engages one of said recesses to maintain said blade guard assembly in said protective and retracted positions.

13. A knife with a spring loaded guard assembly comprising:

- a blade member comprising a blade with a sharpened edge and integral shank;
- a handle assembly mounted to said shank; and
- a blade guard assembly comprising a sheath which covers the sharpened edge and being mounted for pivotal movement about said blade member between a stable retracted position adjacent said handle to a stable protective position covering said sharpened edge, said blade guard assembly being spring loaded by a spring

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configured to bias said blade guard assembly for pivotal movement about a pivot axis and having a biased actuator to retain said blade guard assembly in said stable retracted position and said stable protective position, said sheath comprising an arcuate arm extending from a quasi-circular shoulder plate defining a central opening coaxial with said pivot axis, said shoulder plate defining an arcuate guide slot circumscribing said central opening and having first and second ends, said first and second ends each defining an enlarged opening, said biased actuator including a first enlarged diameter segment configured to selectively engage said enlarged openings at said first and second ends in said retracted and protective positions, respectively, and a small diameter segment designed to engage said arcuate guide slot intermediate said retracted and protective positions, and upon depressing said actuator, said blade guard assembly being pivoted to the protective position from said retracted position by a force of the spring.

14. The knife of claim 13, wherein said spring is a torsion spring having a first end anchored to said shoulder plate and a second end anchored to said shank.

15. The knife of claim 13, wherein said actuator comprises a spring loaded pusher having a detent which projects from a surface of said shank and said shank defines a slot adjacent said pivotal axis sized to receive said pusher, a pair of recesses extend radially inwardly from a circumferential periphery on opposite sides of said shoulder plate, and said detent selectively engages one of said recesses to maintain said blade guard assembly in said protective and retracted positions.

16. The knife of claim 13 wherein said arcuate arm is disposed intermediate said first and second sheath members of said sheath and a plurality of connectors secure said first and second sheath members to said actuator arm.

17. The knife of claim 13 wherein said shank and handle assembly have an ergonomic contour, and said shank defines a recess.

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